$$\therefore\ p=\frac{a[(\sin\theta'-\cos\theta')+(\sin\theta''-\cos\theta'')+(\sin\theta'''-\cos\theta''')+\text{ etc.}]}{a[(\sin\theta'+\cos\theta')+(\sin\theta''+\cos\theta'')+(\sin\theta'''+\cos\theta''')+\text{ etc.}]}$$

$$=\frac{a\int(\sin\theta-\cos\theta)d\theta}{a\int(\sin\theta+\cos\theta)}.$$

The limits of θ for favorable cases are $\frac{1}{2}\pi$ and $\frac{1}{4}\pi$ and doubled, for the total cases $\frac{1}{2}\pi$ and 0.

$$\therefore\ p=\frac{2\int_{\frac{1}{4}\pi}^{\frac{1}{2}\pi}[\sin\theta-\cos\theta]d\theta}{\int_0^{\frac{1}{2}\pi}[\sin\theta+\cos\theta]d\theta}=(\sqrt{2}-1).$$

NOTE.—The answer given in Professor Byerly's Integral Calculus, Edition ot 1890, is $\frac{1}{2}-1/\pi\log2$.

This is the answer to the following problem: *From a point taken at random in the side of a square, a line is drawn at random across the square. What is the chance that the line will intersect the opposite side of the square?*

Professor Zerr interpreted the problem in this way and solved it accordingly.

Solutions somewhat similar to the one above were received from J. M. Colaw and Lon C. Walker.

Professor Walker sent a solution of No. 93. His answer is $\frac{1}{24}\pi p^2$. This difference in results is due to the different interpretations of the problem by Professors Zerr and Walker.

97. Proposed by L. C. WALKER, Assistant Professor of Mathematics, Leland Stanford Jr. University, Palo Alto, Cal.

A straight line is drawn at random across a circle, and five points are taken at random in the surface of the circle. Required the chance that all the points are on the same side of the line.

Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

Let θ=angle subtended by random chord at the center. Then area of the smaller segment is $a^2(\theta-\sin\theta\cos\theta)$. Hence the required chance is

$$p=\frac{\int_0^{\pi}2[a^2(\theta-\sin\theta\cos\theta)]^5a\sin\theta d\theta}{\int_0^{\pi}(\pi a^2)^5a\sin\theta d\theta}$$

$$=\frac{1}{\pi^5}\int_0^{\pi}(\theta-\sin\theta\cos\theta)^5\sin\theta d\theta=1-\frac{128}{9\pi^2}+\frac{2768896}{33075\pi^4}=.4184.$$